

Precont® PU4LM

Universal pressure transmitter / pressure switch
for hygienic and aseptic applications

Technical information TI06.25



Application

- Food and beverage industry
- Pharmaceutical industry
- Biotechnology
- Sterile process engineering

Main features

- Measuring ranges from 100 mbar up to 25 bar
- Various hygienic and aseptic process connections
- Metallic front-flush EHEDG compliant diaphragm
- Process temperature range -20°C to +150°C
- Fully welded robust steel enclosure
- High protection class IP69K/IP67
- Highest accuracy to $\leq 0,15\%$
- Electronic 4...20mA FSK / RS485 Modbus®-RTU / IO-Link® / O...10V
- Certification ATEX / IECEx: Ex ia IIC Ga / Ex ia IIIC Da
- Electrical connection M12 plug or angled plug



Description

The device is an electronic pressure transmitter / pressure switch for monitoring, control and continuous measurement of pressures.

A high variety of versions of process connections and electronic types allows the use for a wide range of applications, also for demanding measuring requirements.

The front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process, also by CIP/SIP cleaning processes.

Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with viscose or also frequently changing media.

The front-flush diaphragm is completely welded with the process connection and supplied with a positive seal. A reliable, dead-space free sealing is thus assured.

Due to its high accuracy and the digital adjustability by FSK, RS485 Modbus®-RTU or IO-Link® the device can be suited to a wide variety of applications.

The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.

A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.

Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

A LABS- resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like factory certifications for drink water resp. food suitability.



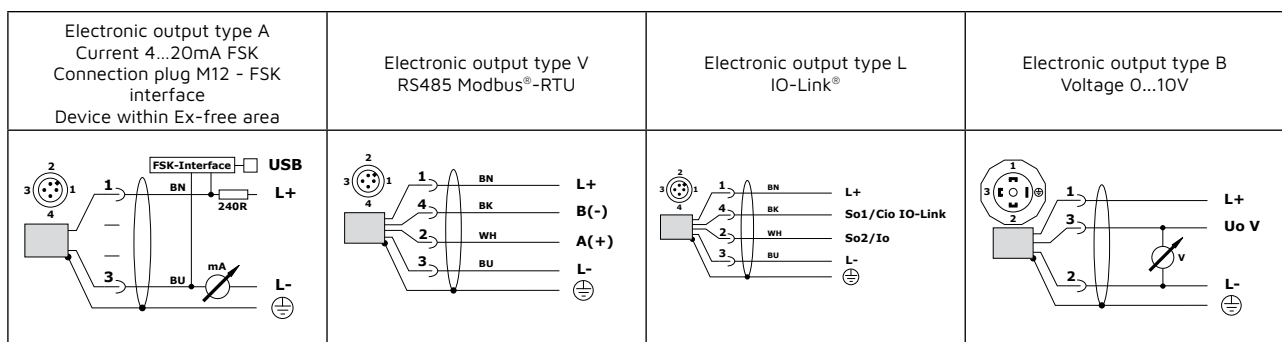
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CONTACT US

Lauterbachstr. 57 1/2, D - 84307 Eggenfelden
info@acs-controlsystem.com
www.acs-controlsystem.com
+49 8721-96680

Technical Data

Measuring range										
Nom. pressure PN rel.	[bar]	0..0,1	0..0,25	0..0,4	0..0,6	0..1	0..2,5	0..4	0..6	0..10
		0...16	0..25	-1..0	-1..1 bar					
Output type A - Current 4...20mA FSK										
Analogue output 4...20mA	3,9...20,5mA, Measuring range [08] = 4...20mA, error $\leq 3,9\text{mA} / \geq 20,5\text{mA}$									
Time behavior	$\leq 5\text{ms}$ (td = 0s)									
Interface	FSK / 1200 Bit/s									
Output type V - RS485 Modbus®-RTU										
Interface	RS485, bidirektional / Modbus-RTU / 4,8...38,4 kBaud									
Input resistance	112k Ω									
Time behavior	$\leq 2\text{ms}$ (td = 0s)									
Output type L - IO-Link®										
Interface	IO-Link V1.1 / Port Class A / Com2 (38,4 kBaud), Com3 (230,4 kBaud)									
Analogue output	3,8...20,5mA, measuring range [08] = 4...20mA, error $\leq 3,6\text{mA} / \geq 21\text{mA}$ 0...20,5mA, measuring range [08] = 0...20mA, error $\leq 0,05\text{mA} / \geq 21\text{mA}$									
Time behavior	$\leq 2\text{ms}$ (td = 0s)									
Switch output	2x PP (Push-Pull), switch to +L/-L									
Output type B - 0...10V										
Signal range	0...10,25V, Measuring range [08] = 0...10V, error 0V / $\geq 10,25\text{V}$									
Time behaviour t90-min	$\leq 5\text{ms}$ (td = 0s)									
Auxiliary power										
Supply voltage Us / Input current Is / Ready delay time	Type A - 4...20mA FSK: 9...35VDC reverse polarity protected / Ripple voltage $\leq 2\text{Vpp} / \leq 20,5\text{mA} / \leq 0,1\text{s}$ (td = 0s) Type A - 4...20mA FSK Ex: 9...30VDC / $\leq 2\text{Vpp} / \leq 22\text{mA}$ Type B - 0...10V: 14...35VDC reverse polarity protected / Ripple voltage $\leq 2\text{Vpp} / \leq 25\text{mA}$ (Iuo = 0mA) / $\leq 0,1\text{s}$ (td = 0s) Type V - RS485 Modbus®-RTU: 6...35VDC reverse polarity protected / Ripple voltage $\leq 2\text{Vpp} / \leq 10\text{mA}$ (Co = 0mA) / $\leq 0,1\text{s}$ (td = 0s) Type L - IO-Link® inactive: 9...35VDC reverse polarity protected / Ripple voltage $\leq 2\text{Vpp} / \leq 20\text{mA}$ (Co / So / Io = 0mA) / $\leq 0,1\text{s}$ (td = 0s) Type L - IO-Link® active: 18...30VDC reverse polarity protected / Ripple voltage $\leq 2\text{Vpp} / \leq 20\text{mA}$ (Co / So / Io = 0mA) / $\leq 0,1\text{s}$ (td = 0s)									
Measuring accuracy										
Characteristic deviation	$\leq \pm 0,05\%\text{FSI} / \pm 0,1\%\text{FSI} / \pm 0,2\%\text{FSI}$									
Long term drift zero	$\leq \pm 0,15\%\text{FSI}/\text{year}$									
Influence temperature	$T_k \leq \pm 0,05\%\text{FSI}/\text{K}$									
Process conditions										
Process temperature	-20...+150°C (-13°F...+302°F) FKM/FPM: -20...+150°C (-13°F...+302°F) EPDM: -20...+140°C (-13°F...+284°F) ATEX/IECEX: acc. to certificate ATEX/IECEX									
Pressure cycles	≥ 100 Mio. (1,2xPN)									
Environmental conditions										
Environmental temperature	-20°C...+100°C / ATEX/IECEX: see certificate									
Protection level	IP69K/IP67 (EN/IEC 60529)									
MTTF	4...20mA: 745 years / 0-10V: 610 years / RS485 Modbus®-RTU: 561 years / IO-Link®: 601 years									

Electrical connection



Dimensions (mm)

Plug M12 [14-S]	Plug EN 175-301-803-C [14-C]	Plug EN 175-301-803-A [14-A]
<p>Technical drawing of Plug M12 [14-S]. Dimensions: M12x1, 10, 27, 26, 13, 2, 3.5, 5, 9.5, G 1/4" A, [11-0] 35, [11-1] 57.</p>	<p>Technical drawing of Plug EN 175-301-803-C [14-C]. Dimensions: 28, 50, 27, 26, 13, 2, 3.5, 5, 9.5, G 1/4" A, [11-0] 35, [11-1] 57.</p>	<p>Technical drawing of Plug EN 175-301-803-A [14-A]. Dimensions: 36, 49, 27, 26, 13, 2, 3.5, 5, 9.5, G 1/4" A, [11-0] 35, [11-1] 57.</p>

Milk pipe coupling DIN 11851 - DN50 [04-M]	Varivent N - DN40...162 (1½"...6"), Ø 68mm [04-P]
<p>Process pressure P_{max} = 25 bar</p> <p>Technical drawing of Milk pipe coupling DIN 11851 - DN50 [04-M]. Dimensions: M12x1, 10, 41, 22, 68, Rd78x1/6", 92, 90, 11.</p>	<p>Process pressure P_{max} = 25 bar</p> <p>Technical drawing of Varivent N - DN40...162 (1½"...6"), Ø 68mm [04-P]. Dimensions: M12x1, 10, 41, 25.5, 17, 12.3, 68, 84, 90.</p>

Further terminal assignment and dimensional drawings can be found in the operating instructions or in the technical information.

Order code

Type	PU4L Hygienic applications
Measuring system – material diaphragm (process wetted) / sensor type	M CrNi-steel / strain gauge
Approval	S Standard X ATEX II 1 G / IECEx Ex ia IIC Ga resp. ATEX II 1 D / IECEx Ex ia IIIC Da (only Output type – A and Electrical connection – S)
Process connection	5 Thread ISO 228-1 – G1”B, front-flush, O-ring gasket, EHEDG compliant, for welding socket BEFVE10 N Dairy coupling DIN 11851 – DN40, PN40 M Dairy coupling DIN 11851 – DN50, PN25 P Varivent® – Type N / Ø68mm / tube DN40-162 / 1½”-6”, PN40 L DRD – DN50 / Ø65mm, PN25 Y others
Material process gaskets (process wetted)	1 FPM – fluorelastomere (e.g. Viton®) 3 EPDM – ethylene-propylene-dienmonomere, FDA-listed Y others
Material process connection (process wetted)	V CrNi-steel
Material terminal enclosure	C CrNi-steel
Measuring range	01 0...100 mbar 02 0...250 mbar 03 0...400 mbar 04 0...600 mbar 05 0...1 bar 07 0...2,5 bar 08 0...4 bar 09 0...6 bar 10 0...10 bar 11 0...16 bar 12 0...25 bar 16 -1...0 bar 17 -1...+1 bar YY Special measuring range
Electronic – output	A Current 4...20mA, FSK, 2-wire B Voltage 0-10V, 3-wire (only with Electrical connection – C or A) V RS485 Modbus®-RTU, 4-wire (only with Electrical connection – S) L IO-Link®, 1x current 0/4...20mA / 2x switch, 4-wire (only with Electrical connection – S)
Electronic – function	S Standard
Process temperature	0 Standard -20°C...+150°C
Pressure type	R Gauge pressure A Absolute pressure
Measuring system – accuracy	1 0,5% 8 Xcellence – 0,15%, linearization protocol
Electrical connection	S Plug M12x1 C Plug EN 175-301-803-C (DIN 43650-C) A Plug EN 175-301-803-A (DIN 43650-A)
Additional options	-SF LABS-free, silicone-free / paint compatible version -ML Measurement point designation / TAG – Laser marking -WT Factory certification – drink water suitability -KF Configuration / Preset -WK Factory calibration – calibration certificate

Precont® PU4L M V C S O